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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/805,153	03/14/2001	Kenichiro Suetsugu	2001_0307A	1770

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EXAMINER

EDMONDSON, LYNNE RENEE

ART UNIT	PAPER NUMBER
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1725

DATE MAILED: 11/24/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/805,153

**Applicant(s)**

SUETSUGU ET AL.

**Examiner**

Lynne Edmondson

**Art Unit**

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 September 2003.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-8 and 11-20 is/are rejected.
- 7) ☒ Claim(s) 9 and 10 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 13 July 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. §§ 119 and 120

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.  
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 1. 6) ☐ Other: \_\_\_\_\_

## **DETAILED ACTION**

### ***Election/Restrictions***

1. The claims have been rejoined.

### ***Specification***

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet within the range of 50 to 150 words. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

### ***Claim Rejections - 35 USC § 102***

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

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4. Claims 1-4 are rejected under 35 U.S.C. 102(b) as being anticipated by Sekhar (USPN 5127969).

Sekhar teaches a connecting material comprising solder into which a hydrogen storage material (Mg, Ti, Al) is dispersed (col 2 line 444 – col 3 line 32). The material changes volume as do most metals when heated. There is no indication that the material is storing hydrogen in the solder.

5. Claims 1-8 and 11-20 are rejected under 35 U.S.C. 102(b) as being anticipated by Tadatomo et al. (JPN 10-261866 A).

Tadatomo teaches a method of mounting multiple electronic components such as chips on a circuit board (paragraphs 1 and 25) using a connecting material comprising solder into which a hydrogen storage material such as LaNi, LaNiAl, Ti, Mg or Zr is dispersed (paragraphs 6 and 8). The material changes volume when heated (paragraphs 11, 12 and 21). The solder is in cream form (paragraph 18). The solder is heated and cooled to form the connection (paragraphs 25-27). The component is detached by changing the atmosphere (temperature and pressure) at the connection to increase the volume of the hydrogen storage metal and by applying an external force (removal means) (paragraphs 20, 27 and 28). The atmosphere is a pressure of 3 MPa (30 atm, paragraph 30) and a temperature of 70 C (paragraph 11). See also Suga claims 1-9.

6. Claims 1-8, 11-13 and 16-20 are rejected under 35 U.S.C. 102(e) as being anticipated by Farooq et al. (USPN 6574859 B2).

Farooq teaches a method of mounting multiple electronic components such as chips on a circuit board (col 1 lines 10-16) using a connecting material comprising solder into which a hydrogen storage material (Pd) is dispersed (col 3 lines 10-35 and col 7 lines 7-20). The material changes volume as do most metals when heated. There is no indication that the material is storing hydrogen in the solder. The connecting material is in cream (paste) form (col 7 lines 52-57). The solder is heated and cooled to form the connection (joint, col 7 line 52 – col 8 line 6). The component is detached by changing the atmosphere at the connection to increase the volume of the hydrogen storage metal (by heating) and by applying an external force (vacuum tool). As the tool moves from one site to the next, the atmosphere (temperature) of at least two components will be different (col 1 lines 33-45, col 5 line 42 – col 6 line 7 and col 9 lines 1-16). See also Farooq claims 1, 4, 8, 11, 14 and 17-25.

***Allowable Subject Matter***

7. Claims 9 and 10 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

8. The following is a statement of reasons for the indication of allowable subject matter: The closest prior art teaches the invention essentially as claimed using different solders having different properties for joining different components. However, only one

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solder contains a hydrogen storage metal. The other is conventional Pb/Sn eutectic solder. See Farooq (USPN 6574859 B2).

### ***Conclusion***

9. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Hampden-Smith et al. (USPN 6159267, solder, hydrogen storage material, component mounting), Kolesar et al. (USPN 4817851, detaching method), Haszler et al. (USPN 6302973 B1, connecting material), Coffin (USPN 3879836, detaching method), Okutomi et al. (JPN 06-239668 A, connecting material) and Nippon (JPN 63-17267 A, connecting material).

10. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lynne Edmondson whose telephone number is (703) 306-5699. The examiner can normally be reached on Monday through Thursday from 6:30 a.m. to 5 p.m.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tom Dunn can be reached on (703) 308-3318. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0651.

Lynne Edmondson  
Examiner  
Art Unit 1725

LRE

 11/17/13